



KERALA UNIVERSITY OF FISHERIES AND OCEAN STUDIES (KUFOS)

PANANGAD, KOCHI



DIRECTORATE OF EXTENSION

REPORT ON THE EXTENSION ACTIVITIES OF THE DIRECTORATE OF EXTENSION (2021-22)

Funded by Government of Kerala



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1. Introduction

In many instances, lack of awareness about the improved technology acts as a major constraint in the adoption of various practices, hindering the development of the concerned sector. Tremendous developments are taking place in many fields and transfer of the same to the stakeholders quickly in an efficient manner is imperative for the progress of the country. In this context, extension, the vital link connecting the technological development with the production system plays a crucial role.

Fisheries sector has witnessed tremendous developments both in aquaculture and capture fisheries. Though so many institutions, State/Central/NGO's are engaged in the transfer of various technologies aimed at the development and welfare of the fish farmers and fisherfolk, it has not yet reached to the desired extent as envisioned. Despite their efforts, fisheries sector continues to be one of the most backward areas. Lack of awareness about various welfare schemes implemented by State/Central Government agencies still continues to be a major barrier in availing the benefits from different agencies, hindering their socio economic development. One of the remedies is to strengthen the extension services to the community. Taking into account of these aspects, Kerala University of Fisheries and Ocean Studies (KUFOS) has implemented various extension projects aimed at the total development of the fisheries sector. These projects have helped in creating mass awareness about the various technologies in the field of fisheries, augmenting the fish production and protein supply to the community by adopting innovative aquaculture practices in an eco-friendly and sustainable manner, creating more employment opportunities in the concerned field, leading to an increase of their income and improvement in the quality of life and ensuring livelihood security to them.

2. Extension Projects

Directorate of Extension, Kerala University of Fisheries and Ocean Studies (KUFOS) has implemented the following Plan Projects funded by Government of Kerala during the year 2020-21.

I. Village Adoption for Empowerment and Capacity Building Ensuring Livelihood of Fisherfolk in Central Kerala

Kerala University of Fisheries and Ocean Studies (KUFOS) is implementing the Plan Project “ Village Adoption for Empowerment and Capacity Building Ensuring Livelihood of Fisherfolk in Central Kerala” from the year 2015 onwards. The major objectives of the project are promoting diversified aquaculture practices and allied activities in an eco-friendly and sustainable manner so as to increase the fish production of the State, creating more employment opportunities to the fish farmers and fisherfolk, thus ensuring livelihood security to them. The project also focuses on transfer of post harvest technologies to the target group with a view to ensure better quality products both for domestic and export market and helps in providing gainful employment by establishing small scale units along the coastal area. While promoting these activities special emphasis is being given for women empowerment also. Every year the University is adopting 2-3 villages and implementing the activities by establishing demonstration centers on various practices in ideal locations so as to develop interest among the farming communities and to motivate them in adopting the technologies. All these activities are being carried out with the cooperation and participation of the local bodies.

In view of the visit of the peer review team for ICAR accreditation of the Faculty of Fisheries Science, KUFOS, the activities of the said project during the year 2021-22, focused mainly on promoting



aquaculture activities in Kumbalam village. Though the Covid 19 restrictions imposed during the above period acted as a major constraint in field work viz. visiting and selecting ideal locations and promoting aquaculture activities, the University could establish seven pen culture and five cage culture demonstration units in pearlspot, seabass and GIFT tilapia farming at different locations of the village. Various inputs like netting materials, cages, GI frames, floats, seeds of pearlspot, seabass, and GIFT tilapia, feed and other accessories necessary for establishing demonstration units were distributed to the beneficiary farmers who were selected through the Panchayath. Continuous monitoring and periodic growth assessment were also carried out throughout the culture period. The idea behind establishing demonstration units is to convince the farmers about the utility and feasibility of the technology and to motivate them in adopting various aquaculture practices in an ecofriendly and sustainable manner. Harvesting of some of the units in pen culture and cage culture was carried out during the month of December 2021 and the results were encouraging.



Stocking the pen culture unit at Chathamma, Panangad by Prof. (Dr.) K Riji John, honorable Vice Chancellor, KUFOS.



Distribution of netting material and feed to the beneficiary farmers



Harvesting of the Cage culture demonstration unit (Seabass) at Chathamma by the honorable Vice Chancellor Prof.(Dr.) K. Riji John on 22/12/2021



Training programme on “Advanced techniques in brackish water aquaculture”

As part of the project a training programme on “Advanced techniques in brackish water aquaculture” for the fish farmers was organized at KUFOS Head quarters from 3/3/2022 to 5/3/2022. The programme was jointly organized by the Directorate of Extension and Faculty of Fisheries Science, KUFOS. Dr. Daisy C Kappen, the Director of Extension welcomed the dignitaries and farmers and explained details of training programme. The programme was inaugurated by Prof.(Dr.) K. Riji John, honorable Vice Chancellor of KUFOS and presided over by Dr. B. Manojkumar, Registrar, KUFOS. Dr. Devika Pillai, Director of Research and Dr. M. Rosalind George, Dean Faculty of Fisheries offered felicitations. Dr. Gijoltoop, Principal Investigator of the project expressed vote of thanks on this occasion.

The sessions include Problems and prospects of brackish water aquaculture, Principles of aquaculture, Biofloc culture, Pen and cage culture, Seed production and culture of Pearl Spot, activities of Department of Fisheries, Brackish water shrimp culture, Mussel culture, feed formulation and preparation, preparation of Value added products and marketing, fish and shrimp diseases which were engaged by Smt Dona P, Guest Faculty of Department of Fisheries Extension, Economics and Statistics, Smt. Shalumol Salas, Guest Faculty of Department of Fisheries Extension, Economics and Statistics, Sri M. Shaji, Retd. Joint director MPEDA, Sri. Saneeer N S, Fishing Technology Asst., Dr. Anwar Ali, Assistant Professor Department of Fishery Resource Management, Smt. Divya T Babu, Department of Fisheries, Sri. Ragesh C. G. Research Fellow, Dr. Bindhi S Kumar, Training Associate, Sri. Vishnu R Nair, Research Associate CIFT and Dr. Safeena M. P. Assistant professor, Department of Fish Processing Technology. On the last day of the training programme a field visit to the western campus of KUFOS where the brackish water shrimp farms are located was also organized. Prof.(Dr.) B. Manojkumar Registrar i/c, KUFOS distributed the certificates to the participants. Altogether 20 farmers attended the training programme.

II. Earn While You Learn (EWYL)

The concept of this programme is to develop entrepreneurship among the students undergoing various courses in the University. Aquaculture and allied subjects dominate in their curriculum and a thorough hands-on exposure in the field will enable them to understand the basic concepts through a more practical oriented approach, to prepare them as capable professionals and turn them to job creators than job seekers. This programme, apart from giving practical exposure, will also enable them to be self-sufficient, confident and efficient managers. Kerala University of Fisheries and Ocean Studies (KUFOS) is implementing this project by utilizing the infrastructure facilities available in the University.

Earn While You Learn Programme-Guidelines

Preamble : Earn While You Learn programme is envisaged to strengthen the link between learning process and field oriented farming practices. This will reinforce the instructional curricula discharge at class room on the one hand and lab to land on the other. It will also help to improve the farming practices by getting innovative ideas from the students (land to lab). This mechanism will help the students to acquire professional competency in the field of fisheries and allied areas.

- Students of KUFOS will be entrusted with this programme and it will be voluntary in nature. Participating students will be given certificate.
- Areas identified for Earn While You Learn Programme are
 1. Aquaculture- mono/polyculture variety species
 2. Integrated farming



3. Cage/Penculture
4. Ornamental Fish Culture
5. Aquaponics
6. Value addition

- The students will be grouped into batches of 10 each and each group can opt one of the above mentioned areas of activity
- Sales will be through Amenity Centre, KUFOS.
- Service of labourers can be availed of during the period of the programme as per requirement
- Sixty percent of the profit generated through the programme shall be disbursed to the students.
- Remaining portion of the profit and input cost shall be refunded to the University.
- Periodic maintenance of the infrastructure facilities shall be done by the University
- The programme will be jointly implemented by the Directorate of Extension and school concerned
- There shall be a report authenticated by the monitoring committee.
- There shall be a stock register maintained by the faculty concerned, countersigned by the Director of the respective school.
- The programme shall be monitored by a committee consisting of the Director of Extension as the chairperson and a faculty member as convener and one faculty nominated by the honorable Vice Chancellor. Director of the school concerned shall be an Ex-Officio member

During the year 2020-21, the activities of EWYL were on a low key as students were unavailable on the campus during the first half of the year due to COVID restrictions. Later, though the students were available they were engaged in continuous practical classes and examinations. Hence, certain low intensity activities were planned in line with the relaxed covid protocols. Students were involved in ongoing activities like rearing Karimeen, ornamental fishes, tilapia, etc. Apart from these new initiatives in rearing Murrels, high density tilapia culture and propagation of Aquatic plants were undertaken by a group of students. As part of the programme, six tanks and a microscope were procured in the Financial Year.



*Seed of Murrel
weaned to floating feed*



Aquarium Plant Rearing



High density Tilapia Culture

Currently the following activities are ongoing.

- Rearing and seed production of Karimeen, *Etroplus suratensis*
- Rearing of Red Tilapia
- Propagation of aquatic plants and aquarium fishes
- Culture of murrels



III. Establishment of Farm Radio Station for Hastening Fisheries development in the State

As part of the Plan Project “Farm Radio”, a well equipped Audio Video Recording Studio with all facilities both for audio and video recording has started functioning during the year 2018 onwards. Currently a Cameraman cum NLE Editor and a Production Associate are working in this project. In addition to documenting the activities and achievements of the University in teaching research and extension, instructional films in diversified aquaculture activities, production of value added fishery products etc are also taken for transferring the technologies to the fish farmers and fisherfolkalong the coastal area. Two short films in cage aquaculture and pen culture of ten minutes duration has already produced. Video recording of the production of value added fishery products, fresh water fish farming, Vannamei shrimp farming etc. are going on. Since the lack of adequate knowledge about the various technologies in the field of fisheries sector still acts as a major constraint in the wide spread adoption of various technologies, such an approach in communicating different technologies through Audio Visual aids to the target group will definitely help in increasing the rate of adoption of practices, leading to increased production from the fisheries sector. As per the decision of Governing Council, Directorate of Extension is outsourcing the above facilities to various institutions and started creating income to the University. An amount of Rs.1,66,875/- (One lakh sixty six thousand eight hundred and seventy five only) has been earned during the year 2021-22 by outsourcing the studio facilities. The following activities were carried out during the year 2021-22.

APRIL-2021.....

- Photography of send off function arranged by the Staff club on 30th April 2021

MAY -2021.....

- Photography of Consultation Meeting on ”Comprehensive Development of Chellanam Panchayat through Scientific Interventions” on 29/05/2021

JUNE-2021.....

- Videography and photography of Inauguration of pen culture units established at Chathamma as part of village adoption program of KUFOS on 23/06/2021
- Video editing of Documentary film about pen culture on 25/06/2021

JULY-2021.....

- Videography of visuals required for the production of video film on fresh water farming on 08/07/2021
- Video editing of short film on “Fresh Water Fish Culture” on 09/07/2021
- Voice recording of Prof. (Dr.) Daisy C Kappen, Director of Extension for broadcasting a talk on “Employment opportunities in Fisheries sector” through AIR on 12/07/2021.
- Videography and photography of project proposal meeting and campus visit of Shri. Saji Cherian, honorable Minister of Fisheries, Culture and Youth Affairs at Puthuvypin campus on 15/07/2021
- Photography and Videography of Life Time Achievement Award giving ceremony on the occasion of the celebrations of the “Farmers day” on 22/07/2021



AUGUST -2021.....

- Videography and photography of 7th convocation of KUFOS on 12/08/2021
- Sorting and editing of photos of 7th convocation on 13th, 16th and 17th August 2021 for uploading in the University website and displaying in the University lobby.
- Photography of Independence Day celebrations conducted in KUFOS on 15/08/2021
- Video editing of 7th convocation on 13th, 16th, 17th, 25th and 26th August 2021
- Photography of distribution of inputs to the participants (SC/ST) of the training programme on “Ornamental fish farming” organized by NBFGR and KUFOS on 16/08/2021.
- Photography of Hon'ble Vice Chancellor of KUFOS for uploading in the KUFOS website on 17/08/2021
- Video shooting of SWOYAM MOOC programme for IGNOU Cochin regional center on 26/08/2021
- Video editing of SWOYAM MOOC video for IGNOU Cochin regional center on 27/08/2021
- Video shooting and editing of SWOYAM MOOC programme for IGNOU Cochin regional center on 28/08/2021
- Video shooting and editing of SWOYAM MOOC programme for IGNOU Cochin regional center on 31/08/2021

SEPTEMBER-2021.....

- Video shooting and editing of SWOYAM MOOC programme for IGNOU Cochin regional center from 1st to 4th September 2021
- Video editing of SWOYAM MOOC programme for IGNOU Cochin regional center on 06/09/2021
- Video shooting of KUFOS MOOC Programme on “canning” on 07/09/2021
- Video recording of “fish pasta making process” on 08/09/2021 for engaging classes to the entrepreneurs through online in the workshop “DST-TEDP” organized by CASRED, KUFOS
- Video recording of quality testing process of different packaging material on 14/09/2021 for engaging classes to the entrepreneurs through online in the workshop “DST-TEDP” organized by CASRED, KUFOS
- Audio recording and editing of above videos from 15th to 18th, 23rd, 28th and 29th September 2021
- Photography of the inauguration of the agricultural programme by Honorable Prime Minister of India, Sri. Narendra Modi on 28/09/2021 organized by ICAR through online.

OCTOBER -2021.....

- Video shooting of SWOYAM MOOC programme for IGNOU Cochin regional center on 1st October 2021
- Video editing of SWOYAM MOOC programme for IGNOU Cochin regional center on 4th and 5th October 2021
- Video shooting of the training program on “Value added fish products” for the fish farmers conducted at KUFOS Regional center, Payyanur on 07/10/2021
- Photography of the Research Council meeting on 11/10/2021
- Video shooting of KUFOS MOOC Programme on “Canning Part 02” by Dr Abhilash Sashidharan on 13/10/2021
- Video editing of KUFOS MOOC Programme on “Canning Part 02” by Dr Abhilash Sashidharan on 16th, 18th, 20th, 22nd, 25th and 26th October 2021
- Photography of NCC programme on 23/10/2021.



NOVEMBER -2021.....

- Photography of “Kerala Piravidinam and Malayalabhakshadinacharanam” on 01/11/2021
- Photography of the book release “Costal Kerala” by Prof.(Dr.) K Riji John, Hon'ble VC, KUFOS written by PhD Scholars of various Universities on 2nd November 2021.
- Photography of MoU Signing with CWRDM on 05/11/2021
- Photography of seed stocking at Edamalar dam on 09/11/2021 as part of the project “Enhancing reservoir for production and creation of livelihood opportunities for the tribal people in Munnar landscape through diversified farming practices of native fishes.”
- Photography of Extension Council meeting on 18th November 2021
- Photography of the Inauguration of the Music Class organized by Staff club, KUFOS on 18th November 2021
- Photography of Manappuram group's scholarship distribution to the students organized by Faculty of Fisheries Management on 19th November 2021
- Video editing of MOOC Programme by D.rAbhilashSasidharan on 22nd and 23rd November 2021
- Photography of the “World Anti-microbial Awareness week-2021” programme on 24th November 2021
- Photography of the smart class room of the plan project “MOOC” on 24th November 2021 for including in the annual report-2020-21.
- Audio Recording and Editing for AIDS Awareness programme conducted by NSS unit of KUFOS on 29th and 30th November 2021.

DECEMBER - 2021.....

- Photography of AIDS Awareness programme jointly organized by NSS KUFOS and District Health Department on 1st December 2021.
- Photography of “Hands-on training in mendeley” organized by Department of Business Administration and Management FFM, KUFOS on 1st December 2021
- Photography of “National Agriculture Education Day” programme organized by Directorate of Extension and Faculty of Fisheries Science at Panangad Vocational Higher Secondary School on 3rd December 2021
- Photography of Training for NSS Volunteers on “ Identifying poor people” conducted by Kumbalam Gramapanchayath and Kerala Institute of Local Administration on 6th December 2021
- Photography of Field visit of the Director of Extension on 7th December 2021 for providing advices to the farmers at various places in Kumbalam Grama Panchayat where cage and pen culture demonstration units are established
- Photography of Inauguration of “Inter Department Football Championship 2021” organized by Department of Physical Education, KUFOS on 21st December 2021
- Photography and Videography of harvesting of Pen culture demonstration unit at Cheppanam on 21st December 2021
- Photography and Videography of harvesting of cage culture demonstration unit at Chathamma on 22nd December 2021
- Photography of Prize distribution of “Inter Department Football Championship 2021” organized by Department of Physical Education, KUFOS on 23rd December 2021
- Photography of the Training on ornamental fish culture conducted by CAAHM on 31st December 2021.



JANUARY-2022.....

- Photography of new year celebration at KUFOS on 1st January 2022.
- Photography of the Prime Minister's online address at the release of 10th installment of financial benefit under PM-KISAN scheme on 1st January 2022.
- Photography of distribution of netting material to fish farmers by the Director of Extension under village adoption project on 4th January 2022.
- Photography and videography of national seminar on “Reorienting the Strategies Towards Sustainable Aquaculture and Fisheries” Organized by Faculty of Fisheries science on 6th and 7th January 2022.
- Photography of “Entrepreneurship Training in Bakery Production” organized by CASRED and CEFPT from 12th to 14th January 2022.
- Photography and videography of “One Day State Level Awareness Program on PMMSY” organized by NCDC Thiruvananthapuram Regional center on 13th January 2022
- Video editing of “One Day State Level Awareness Program on PMMSY” organized by NCDC Thiruvananthapuram Regional centre on 19th and 20th January 2022
- Photography of Republic Day celebrations on 26th January 2022
- Sorting of appropriate photos taken during the month January 2022 for displaying in the TV installed in the administrative block and for other purposes on 27th and 28th January 2022

FEBRUARY 2022.....

- Photography of seed distribution and stocking at Chathamma under the plan project “Village adoption” on 5th February 2022.
- Photography of workshop on “Writing for Media” on 8th and 9th February 2022.
- Photography of workshop on “Ornamental Fish Farming” under the ICAR SC/ST Sub plan project on 10th February 2022.
- Photography and videography of three day workshop on “Brackish Water Fish Farming-Advanced Techniques” from 16th to 18th February 2022.

- Videography of Fish pickle recipe video for Department of Fish Processing Technology on 25th February 2022.
- Photography of Seminar on “Preparation of a Framework for Comprehensive Development of Chellanam as a Model Village”.

MARCH - 2022.....

- Photography of three day training for farmers on “Brackish Water Fish Farming- Advanced Techniques” organized by Directorate of Extension and Faculty of Fisheries Science from 3rd to 5th March 2022.
- Photography of “Entrepreneurship Training Programme in Bakery Products” organized by CASRED and CEFPT from 3rd to 5th March 2022.
- Photography of Women's day programme organized by staff club on 8th March 2022.
- Photography of “Sensitization Workshop on Entrepreneurship Development” organized by Department of Fish Processing Technology and CASRED from 15th to 18th March 2022
- Photography of “Seminar & Panel Discussion on Blue economy- Fisheries and Ocean Governance” organized by Pandit Karuppan Chair, Centre For Field Consultancy and Data Analysis and Directorate of Extension on 16th March 2022
- Photography of meeting and discussion of University authorities with Canara Bank officials on 25th March 2022.





Women's day celebration at Karmasadan, Alleppy on 8/3/2022

As part the Village Adoption Programme of KUFOS, Andhakaranazhi region in Pattanakkad Panchayath of Alleppy District had been adopted during the year 2017-18 . For providing gainful employment to the women folk along the coastal area of this region, four fish drying units consisting of 41 beneficiaries had also been started in this Panchayath which is a Tsunami effected area, under the leadership of Fr.Xavier Kudiamssery, Former Extension Council member and Director, ADS, AlleppyKarmasadan. During Fr.Xavier's visit at KUFOS on 5th March 2022, he had informed that they ADS is planning to celebrate the "Women's Day" on 8th March 2022 in a befitting manner and requested the Director of Extension to conduct a colloquium on "Problems faced by the fisher women and their solutions" to these beneficiaries as a follow up programmewhich had already been implemented during the year 2017-18. With the permission of the honorable Vice Chancellor, Directorate of Extension, KUFOS has organized a colloquium "UJJWALA-2022" on 8/3/2022 at Karmasadan, Alleppy for the womenfolk along the coastal areas of Andhkaranzhi region. The programme started at 10.30 am. Fr.XavierKudiamssery, Director, Radio Neythal welcomed the gathering followed by self introduction by the participants. Director of Extension, Dr.Daisy C Kappen inaugurated the programme. Mr. Gireesh U R, Alleppy District Mission Coordinator, Department of Fisheries, Alappuzha gave a brief introduction about the developmental activities of the Department of Fisheries for the upliftment of fisherfolkalong the coastal area and also the various problems faced by the fisherfolk with special emphasis on drudgeries of the women folk. There were discussions on the various problems viz..middlemen exploitation, lack of awareness about the various schemes implemented by various institutions, lack of saving mentality among the fisherfolk, occupational health hazards, marginalization of fisherfolk, hesitance of the new generation towards fishing, fish marketing allied sectors etc. Altogether 40 women fisherfolk attended the programme. Later on, this programme was broadcasted through RADIO NEYTHAL 107.8 FM , Community Radio Station, Alappuzha to give wide publicity and also to make aware of the authorities and concerned people about the drudgeries/problems faced by the womenfolk along the coastal area.

Welcome address Fr.XavierKudiamssery, Director, Radio Neythal



Participants of the Programme



IV. Establishment of Fisheries Technical, Portal and Knowledge Centre

Fisherfolk engaged in fishing activities both in the inland sector as well as in the marine fisheries sector require timely information while carrying out their fishing operations. Similarly, innovations in the aquaculture including improvement in the existing practices have to be transferred in an effective manner to the fish farmers with the objective of increasing their per capita income, augmenting the fish production of the State, thus ensuring their livelihood security. Also, the dwindling catches in the marine sector indicate the necessity of creating awareness about responsible fisheries among the fisherfolk so as to avoid over-exploitation and to conserve the fishery resources for the future generation . Equally important is the post - harvest technology, as the fish is



a highly perishable item, following hygienic handling practices through out the various steps in fish processing is highly essential to ensure a better quality product both for domestic and export market which plays a major role in export earnings of the country.

In the above scenario, establishment of a Fisheries Technical Portal and Knowledge Centre at KUFOS will act as a single window in disseminating all the relevant information and technologies in the field of fisheries to the fisherfolk and fish farmers. It can be transferred to them through publications, conducting awareness and training programmes etc. The research findings, extension activities, academic programmes etc. of the University can be stored as digital files in the center for further use. It will also work as an audio-video library for the use of local people and students. In addition to these, the production of video films in the diversified sectors of fisheries viz. aquaculture and marine capture sector and distributing the same to the public and various institutions engaged in the development of fisheries sector through the centre will contribute to the dissemination of information at a faster rate leading to much progress in the fisheries sector. The Audio Video Recording Studio established at KUFOS has started the production of video films on the above mentioned sectors which can be disseminated among the farming community and fisherfolk through the Portal and Knowledge center established at KUFOS. The center can also provide information on the functions of various institutions/ agencies working in the field of fisheries including their welfare activities. In addition to these, problems/constraints of the stakeholders in the respective field which require scientific interventions can also be conveyed back to the University for conducting research and offering solutions to them through this center . As part of the project the following activities were carried out.

One day workshop on " Writing for Media"

A one day workshop on "writing for media" for the faculties, PG students and Research Scholars of KUFOS was organized at seminar hall, KUFOS in two batches on 8th and 9th February 2022. Sri MangadRatnakaran, Senior Media Person and Writer and Sri Raju E.R. Director, Public Relations, KUFOS engaged classes to the participants.

Introduction to communication theories, Mass communication and media, writing for media Difference between writing for media and writing in literature, Art of story telling in media, art of writing popular science article for media were the sessions included for the workshop. Altogether 54 participants attended the programme. The objective of the workshop was to improve the popular article writing skill to publish in mass media for the faculties, PG students and Researchers

Prof.(Dr.) K Riji John, honorable Vice Chancellor of KUFOS inaugurating the one day workshop on "Writing for Media"



Sri MangadRatnakaran engaging classes to the participants



Participants of the workshop "Writing for Media"





2. Web Telecasting of the Prime Ministers talk on 1/1/2022

ICAR had directed all AUs/Instts/KVKs to make arrangements for the web telecasting of the programme- live streaming of the release of 10th installment of PM-KISSAN financial benefit on January 1st by the honorable Prime Minister of India. It was also informed that he shall address the farmers and scientists, teachers on that day. In this connection all Vice Chancellors were requested to ask their faculty, KVKs and invite at least 100 farmers to campus for attending the programme. As per the direction of the honorable Vice Chancellor, KUFOS, Directorate of Extension had made arrangements for the web telecasting of the programme in KUFOS Seminar hall. The programme started at 12.30pm. Altogether 75 participants including farmers, officials etc. attended the programme. The honorable Prime Minister inaugurated the release of the 10th installment of Kissan Samman at 12.30pm There were reciprocal speech by the Farmer Producing Organizations of different States viz Haryana, Tamilnadu etc.

Web Telecasting of the Prime Ministers talk on 1/1/2022



V. Farm Advisory Services

Lack of knowledge about the improved practices in aquaculture and allied sectors acts as an important constraint in the adoption of better management practices for increasing the fish production of the State. At the same time, the technologies which are production - oriented should be promoted in an eco - friendly and sustainable manner. Creating awareness on freshwater and brackish water farming, mariculture, post- harvest technologies, responsible

fisheries, need to conserve the fishery resources, judicious exploitation of the fishery wealth etc. play a vital role in the total development of fisheries sector . Such information can be provided fruitfully to the farmers and fisherfolk by way of publications, conducting training cum demonstration programmes, showing video films, motivating them by distributing various inputs etc. On account of the Covid 19 pandemic during the year 2020-21, the activities of the center were limited .The following programmes were organized.

1. Fish Farmers day on 22nd July 2021

It was in 2001 that the Government of India declared July 10th as "Fish Farmers Day" to honour the scientists, Hiralal Choudhary, and Dr. K. H. Alikunji who successfully conducted induced - breeding in Indian major carps during the year 1957. Every year KUFOS is celebrating "Fish Farmers Day" in a befitting manner. Due to Covid19 pandemic, during the year 2021, KUFOS celebrated "Fish Farmers Day" on , 22nd July by organizing a one day training programme on " culture of commercially important fishes" through online for the fish farmers. The programme was Inaugurated by Prof. (Dr.) K Riji John, the honorable Vice chancellor of KUFOS and presided over by Dr. B Manojkumar, Registrar, KUFOS. Prof. (Dr.) Daisy. C. Kappen, welcomed the dignitaries and participants to the programme . A life time achievement award in aquaculture was also executed in this occasion. Applications were invited from the aqua farmers all over the State and a selection committee was constituted for the same. The committee scrutinized the applications received and considering the achievements in the field of aquaculture, Sri T. Purushothaman, Chairman of the Aquaculture Development Cooperative Society (ADCOS) was selected for the award Dr. Devika Pillai, Director of research and Sri. Joby George , Finance Officer, offered felicitations during this function. A Reciprocal speech was also delivered by the award winner. Dr. K. Dinesh, HOD, Department of Aquaculture expressed vote of thanks . Technical sessions on the following topics were also arranged.

- a. Breeding of indigenous fishes by Dr. Anwar Ali P H, Asst. Professor, Department of Fishery Resource Management, Faculty of Fishery Science.



- b. Seed production of pearlspot by Dr.Binu Varghese,Asst.Professor, Department of Aquaculture, Faculty of Fishery Science.
- c. Health management in Aquaculture by Dr.Safeena MP,Asst.Professor, Department of Fish Processing Technology, Faculty of Fishery Science.

Honoring the Life time achievement award winner Sri T. Purushothaman, Chairman of the Aquaculture Development Cooperative Society (ADCOS) by the honorable Vice Chancellor, KUFOS



2.Celebrations of the Agricultural Education Day on December 3rd 2021

There has been a direction from Indian Council of Agricultural Research (ICAR) to observe the 3rd December of every year as "Agricultural Education Day" which is the birthday of the first Union Minister of Agriculture of India in 1946 and the first President of independent India BharathRatna, Dr. Rajendra Prasad. It is also directed that the day may be celebrated by inviting school children to the University and they may be engaged in a day long activities as debate competition, essay writing, exhibitions, interaction with the agricultural scientists, policy makers etc. and exposition to inspiring lecturers by reputed professionals.

From 2016 onwards KUFOS has been celebrating Agricultural Education Day in an appropriate manner by inviting the students from various schools, colleges etc. and providing opportunity to them to familiarize with the activities and achievements of the University in teaching, research and extension. Such an approach will help to develop interest among the students in aquaculture and allied sectors of fisheries and also to choose fisheries as their professional and research career towards engaging themselves in the relevant sectors of fisheries. In connection with this programme, KUFOS has been

organizing an "Open Day" celebration every year on December 3rd and more than thousands of students, faculties, staff including public visit the University on that day.

As the COVID situation has improved significantly this year, it was decided to conduct an offline programme as part of the Agricultural Education Day-2021. Vocational Higher Secondary School, Panangad, situated 2 km away from the University campus was selected for organizing the programme. The school has more than 1000 students on the roll mainly belonging to backward families. Out of the total students, 100 students from various disciplines of vocational higher secondary stream were invited for the programme which was conducted outdoors under a tree shade. The event was inaugurated by Prof. (Dr.) Rosalind George, Dean, Faculty of Fisheries Science and the ICAR Nodal Officer of KUFOS in which Prof. (Dr.) Daisy C Kappen, Director of Extension, KUFOS delivered the presidential address. School Principal Mrs. Rethi Devi L. has proposed the welcome address and Dr. K. Dinesh, Associate Professor and Head, Department of Aquaculture felicitated the function. Mr. Rajeev V.R. of Panangad Vocational Higher Secondary School proposed the vote of thanks. In her inaugural speech Dr. Rosalind has elaborately discussed the history and significance of agricultural education in India, which has a history of more than 150 years. India could stride well in various fields of agriculture towards multiplying the productivity in terms of food grains, nuts, milk, meat, eggs and fish. As all we know during the independence and immediate post-independence period our country was suffering from famines, killing lacks of people in different parts of the country. But the scientifically designed Agricultural education programmes have given a boost for improving the farmer's income, which have made our country proud among global nations. Fisheries and Aquaculture, being the most dependable source of food production, special emphasis is given for its comprehensive growth through well formulated farmers friendly programmes. Prime Ministers Matsya Sampadha Yojana (PMMSY) with a total outlay of Rs. 20,050 Crores for a period of five years is a typical example of the Government initiative to promote the sector. So the sector has immense potential for a student to pursue their future carrier.

Dr. Daisy C Kappen in her presidential address has motivated the students by explaining the career opportunities. Since the fisheries education has three integral components like teaching, research and



extension, all sorts of students can fit into the sector in one way or the other depending on their taste and passion.

After the outdoor inaugural session, the students were shifted to a class room for an official lecture on the opportunities of aquarium fish production which was delivered by Dr. K. Dinesh. The topics covered were identification of fishes, food and feeding, fish seed production, nursery rearing and marketing of ornamental fishes. Students were given awareness on the possibility of taking up part time income generating programmes using aquarium fish production and sales during their leisure hours, at the same time not sacrificing their time for studies or self-enrichment.

In addition to the above session, the online programme pertaining to the National Agricultural Education Day organized from 2.00 to 5.00 pm by ICAR was watched by thousands of students from Kerala belonging to high school, higher secondary, graduation and post-graduation level and their teachers using the link provided. The programme was jointly organized by the Directorate of Extension, Department of Aquaculture and the Faculty of Fisheries, KUFOS.

Inaugural Session



Dr.KDinesh,HOD,Department of Aquaculture engaging classes on "Ornamental Fish Culture"



3.Trainingprogramme on "Advanced Techniques in Brackish water Aquaculture"

As part of the plan project entitled "Farm Advisory services", three days training program on "Advanced techniques in Brackish water Aquaculture" was conducted offline during 16-18th February 2022. The training programme started by welcome speech by Prof. (Dr.) Daisy C. Kappen, the Director of Extension, KUFOS and presided over by Dr. B Manoj Kumar, Registrar, KUFOS. The honorable Vice Chancellor of KUFOS Prof. (Dr.) K Riji John inaugurated the programme. Prof. (Dr.) M Rosalind George, Dean ,Faculty of Fisheries Science and Prof. (Dr.)Devika Pillai, the Director of Research KUFOS offered felicitations. At the end of the inaugural function Dr. Safeena, M.P, Principal investigator of the project, proposed vote of thanks followed by lecture sessions by Sri. Dona P., (Guest Faculty, KUFOS), Sri. Shalumol Salus (Guest Faculty, KUFOS), Sri. M. Shaji (Rtd. Joint Director, MPEDA) and Prof.(Dr.)Daisy C. Kappen, on various topics viz. "Basic principles of brackish water fish culture", "Scope and problems in brackish water shrimp and fish culture", "Biofloc culture of fish/ vannamei" and "Cage Aquaculture" . For the second day sessions were conducted on "Seed production and farming of Pearl spot" by Dr. Anvar Ali P.H. (Assistant Professor, KUFOS), "The activities of Dept. of Fisheries" by Sri. Ramya K.D (AFEO, Dept. of Fisheries Ernakulum), "Brackish water shrimp culture" by Dr. Linoy Libini.(Assistant Professor, KUFOS) and "Clam culture" by Dr. Bindi S Kumar (Training Associate, KUFOS). On the third day, the session was started with a lecture on "Fish feed preparation" by Dr. Bindi S Kumar, followed by the lectures on the topics "Fish culture and marketing" by Sri. Vishnu R Nair (Research Associate, CIFT) and "Brackish water fish Diseases and their management" by Dr. Safeena, M.P (Assistant Professor, KUFOS). After the completion of the training sessions the certificates were distributed to the participants by the Registrar KUFOS and a field visit was also arranged to the KUFOS western campus to familiarize the participants about the different aquaculture practices going on in the University. Twenty two farmers attended the training and the programme came to an end by 4 pm on 18th February 2022.



Inauguration of the training programme on " Advanced Techniques in Aquaculture" by the honorable Vice Chancellor of KUFOS,Prof.(Dr.)K.Riji John



Dr Anwar Ali, Asst Professor, Department of Fisheries Resource Management engaging the session on "Pearlspot farming"



VI.Exhibition Unit

Kerala University of Fisheries and Ocean Studies is participating in various exhibitions organized by different Govt./NGO/Private institutions right from its inception. Besides these the University is also conducting exhibitions so as to make aware of the people about the research activities and the various technologies available at KUFOS. Conducting such events in the field of fisheries will aid in the development of fisheries sector through transfer of technologies to the farming community, creating awareness on environmental protection, conservation of fisheries resources, sustainability etc. Aquaclinics arranging along with exhibitions ensure the service of the

experts working in different sectors of fisheries which will help in solving the problems of the farmers. The exhibition unit established at KUFOS has rich collections of specimens, models of various fishing crafts and gears, visual aids showing the activities and achievements of KUFOS, aquarium tanks for setting up of aquariums while participating in exhibitions including a TV for the display of various activities in the field of teaching, research and extension. Due to the Covid 19 restrictions imposed during the year 2021-22, conducting exhibitions by different organizations/institutions were limited and KUFOS has participated only in two exhibitions.

1."EDUCATIONAL CONCLAVE 2021" organized by Malayalam Communications Ltd. Alappuzha.

Malayalam Communications Ltd. a public limited company, had informed that they were conducting an exhibition "EDUCATIONAL CONCLAVE 2021" at Alleppy on 17/9/2021 and requested KUFOS to participate in the event and put up a stall. Considering the necessity of giving wide publicity of the various courses of the KUFOS, the University had participated and put up a stall showing the educational programmes offered by KUFOS. An educational programme promotional material (Audio- Video) had also produced for the same.

2."MATSYAMELA" organized by Aquaculture Development Cooperative Society (ADCOS) at Payyannur

Aquaculture Development Cooperative Society (ADCOS), one of leading aquaculture cooperative societies working in northern Kerala informed that they were planning to start a new freshwater hatchery at Kunhimangalam near Payyanur. Also informed that the hatchery will be inaugurated by Sri.SajiCheriyann, HonbleMinister for Fisheries, Culture and Youth affairs,Govt. of Kerala on 14th January 2022. In connection with this inaugural function, it was planned to hold a big event under the banner of "MATSYAMELA" on 13th and 14th February 2022 and requested KUFOS to participate in the event and put up a stall. The major objective of the programme was to create awareness among the local communities on the merits of using fresh fish for meeting their dietary needs and to provide support to the farmers to



get trained in the value addition of their products for getting a good market. Considering the need for creating mass awareness among the people the activities of the University in education, research and extension etc. and to give wide publicity regarding the activities of the KUFOS Regional Center which is already established at Payyanur during the year 2016, University had participated in the exhibition and put up a stall. More over it was also necessary to give wide publicity among the people in the northern Kerala about the new College which is going to start at Payyanur during the year 2022-23.

The inaugural function of the Freshwater Fish Rearing Center was organized at Kunnimangalam Parambath, Payyanur. Sri. Saji Cherian, honourable Minister of Fisheries, Culture and Youth affairs Govt. of Kerala, inaugurated the Rearing Center on 14/1/2022 at 9 am. Sri. M. Vigin, MLA presided the function and Sri T. Purushothaman, Chairman, ADCOS welcomed the dignitaries and farmers. Sri Rajmohan Unnithan, MP was the chief Guest of the day. Smt. A. Prarthana, President, Kunnimangalam Grama Panchayath, Smt. P. K. Sheeba, member Kunnimangalam Grama Panchayath, Sri. M. V. Jayarajan Secretary, CPI(M) Kannoor District Committee, Sri. Martin George, President DCC, Sri. C. K. Ramesan Master, Karshakamorcha Jilla President, Thavam Balakrishnan, CPI Jilla Executive Member Adv. Abdulkareem Cheleri, General secretary IUML, Kannurjilla Committee, Sri. C. Krishnan Ex MLA, Sri. T. V. Rajesh Ex MLA, Sri. K. Padmanabhan, Former President, Madai Rural Bank, Sri. V. Kunjikrishnan, President Velloor bank, Dr. K. KVijayan, Chairman, ADCOS advisory committee, Dr. B. Manojkumar, Registrar i/c, KUFOS, Smt. C. K. Shyni, DD Fisheries, Kannoor, Smt. V. Rajitha, Asst. Registrar, Fisheries Co operative Society, Sri. K. X. Sebastian General secretary, KAAF offered felicitations in the presence of Sri. T. K. Madhusoodanan, MLA and Sri. M. Rajagopal MLA.

The exhibition programme scheduled on 13th and 14th was inaugurated by Smt. P. P. Divya, District Panchayath President and presided over by P. V. Valsala, President, Payyanur block Panchayath. Sri. K. V. Jyothiskumar, Director ADCOS welcomed the dignitaries and participants. Sri. C. P. Shiju, Smt. K. P. Reena, Sri. M. V. Deepu, members of the Block Panchayath, Dr. M. K. Mukundan, Former Director, CIFT and Dr. K. Dinesh, Special Officer, KUFOS Regional Center and Sri. Pramod, Director ADCOS offered felicitations. Sri. Sasidharan, Kattoor, General

Manager proposed vote of thanks. A training programme of two days duration on "Production of value added fishery products" were also arranged for the farmers. A stall of size 3m x 3m was allotted to KUFOS to showcase the activities of the University. The exhibition was scheduled from 9am to 8pm. Models of various fishing crafts, gears, cage culture etc. were exhibited in the stall. Visual aids showing the activities and achievements of the University in the field of teaching, research and extension were displayed. Brochures and leaflets on technologies developed and standardized at KUFOS like Cage culture of pearlspot, seabass, giant trevally etc were distributed to the public as part of the transfer of technology process. Since the Directorate of Extension does not have sufficient man power for setting up the stall, the service of two technical hands were availed for two days for setting up the stall and engaging stall duty.

Sri. Saji Cherian, honourable Minister of Fisheries, Culture and Youth affairs Govt. of Kerala visiting KUFOS Stall



VII. Centre for Field Consultancy and Data Analysis

Taking into account the need for creating a single window system for providing fisheries sector data and the growing demand for consultancy for data analysis in fisheries and allied sector, Faculty of Management Studies, KUFOS launched a Centre for "Field Consultancy and Data Analysis" during the XII Plan period. The center aims to document, analyze and publish data both from primary and secondary sources relating to fisheries and allied sectors. Providing consultancy service on data analysis and interpretation is also envisioned.



The major objectives are

- To collect world and region-wise fisheries sector data relating to resources, production, fisheries trade, etc.
- Collection of data on total fish production in India and Kerala, species - wise and category wise and its documentation.
- Collection of data relating to marine products export, fishery resources, fisherfolk, etc., of Kerala and India and its documentation.
- Undertake data analysis for industry, researchers, and other agencies on demand.
- Impart training and development services on demand.
- Take up consultancy services in Project preparation and evaluation.
- To suggest policy measures based on the findings of the study

Due to Covid 19 Pandemic, the activities of the Center was limited during the period 2021-22

VIII. Setting up of Cage culture units for production and training in two geographical zones of Kerala for further demonstration and popularization of the technology.

The current project is envisaged to establish cage culture units in two geographical zones of Kerala; North zone and South zone. In North zone, Payyannur, Kannur District and in South zone, Mundrothuruth, Kollam were selected for the implementation of the project. The programme is being operated under the Plan Project of Kerala University of Fisheries Ocean Studies (KUFOS) funded exclusively by Government of Kerala. The project was started in January 2019. The major objective of the project is to train interested beneficiaries in two geographical zones of Kerala (Kannur and Kollam Districts) and establish cage culture units for further demonstration and popularization of the technology which was successfully demonstrated by the Directorate of Extension, KUFOS elsewhere. The lead researcher of the programme is

Dr. K. Dinesh, Associate Professor and Head, Department of Aquaculture and the Co Investigators are Dr. Daisy C Kappen, Professor and Director of Extension, KUFOS, Dr. B. Manoj Kumar, Registrar, KUFOS and Mr. Prasannan, Special Officer of Kollam Regional Centre of KUFOS. The supporting personnel include one Senior Research Fellow (SRF), Miss. Keerthana T.A. and two Field Assistants, Mr. Al Ameen and Mrs. Chinju Lal. The SRF joined the office on 01.01.2019 and two Field Assistants on 29.12.2018 & 30.12.2018 respectively. Keerthana T.A. (SRF) and Al Ameen N. (Field Assistant) were directed to attend the duty in Regional Centre of KUFOS in Payyannur, Kannur and Chinju Lal (Field Assistant) was directed to work in Kollam.

Work done so far-Activities and Achievements

- As the first phase personal surveys were carried out at both stations (Kollam and Payyannur) to assess the interest of the beneficiaries, collect data on existing fish culture practices in the region and the problems faced so far, immediate need of the farmers, status of market and current problems facing by farmers in the areas like availability of inputs, disease occurrences, training and marketing related to fish farming.
- At Payyannur, 'Thuruthi' was the area selected for the implementation of the project and at Kollam 'Mandrothuruth' island was the area selected. Both the areas are economically backward and most of the inhabitants are below poverty line.
- The inputs for the projects were procured from various agencies adhering to the Government norms. In both sites 6 units (3 cages in a single unit) were erected with the dimension of 2x2x1.5 m for a single cage. Each cage unit were allotted to a single group comprising of three people. Altogether 6 groups of beneficiaries were formed at each site. The fish seed, feed, equipment and other necessary inputs were also distributed to the beneficiaries.
- A total number of 4230 *Latescalcarifer* were stocked with a stocking density of 250 no. of seed/ cage at Kollam. In Payyannur, only 4 units were stocked with *Latescalcarifer* with a stocking density of 350/ cage, The culture period was from November to June.



- The project team has provided all the necessary technical support to the beneficiaries. Regular monitoring of water quality, feeding pattern and health of animals were also done.
- The harvest from both sites were done at the first week of June. A total of 385 Kg of fish were harvest from Payyannur site and a total of 394 Kg fish were harvested from Kollam site. The weight of the fish varies from 1400 g to 350 g/ fish and the length of fish were 44 cm to 17 cm / fish. The beneficiaries from both the sites got the highest farm gate price available in the market.
- Conducted a one-day seminar to all beneficiaries at Payyanur on 28/11/2021 and at Kollam on 09/01/2021 to give advice to them with the help of a cage culture expert.
- The harvest from both sites were done at the first week of June. A total of 385 Kg of fish were harvested from Payyannur site on 06/06/2021. The culture period was from November2020 to June2021.
- In Kollam, three groups were harvested, Vellimangalam west group was fully harvested and a total of 300 kg of fish on 22/08/2021 and Vellimangalam (15/06/2021) &Kandramkani group (28/08/2021) were partially harvested. Other groups are continuing the farming.
- In, Payyanur Conducted a review meeting with the beneficiaries to assess the benefits achieved from the first culture cycle and the pros and cons related with the implementation method adopted on 20/09/2021
- In Payyanur and Kollam, the cleaning and other maintenance works of all the cages and other inputs are going on.
- A review meeting was conducted at KUFOS Regional Centre, Payyanur on 28th February 2022 and presented research activities which include completed, ongoing and future research works. The Principal Investigator evaluated the work progress of each activity and opined necessary suggestions.
- As part of the project a Preliminary study of Biofouling of *Mytellastrigata* started at

Payyannur cage culture unit site with help of KUFOS Regional Centre on February 2022.

- One of our trained beneficiaries from Payyanur started their cage culture unit. They stocked in two cages with naturally collected *Etroplussuratensison* March 15, 2022
- The research team regularly visit various farms and ponds in the Kannur and Kasaragod districts for analysing the physio chemical parameters of water and to find out the problems and issues being faced by the aquaculture farmers in their culture systems..

IX. Maintenance of Museum/ Aquarium –

The AGK Menon Memorial Museum of Aquatic Animals established at KUFOS during the year 2016 houses a rich collection of finfish and shellfish specimens from marine and inland waters of India which are on display and attracting school and college students, researchers and the general public. The main objective is to impart education and awareness among them about aquatic bio diversity and to build up their competence and confidence

The ornamental fish culture and aquarium keeping have assumed considerable significance as an international hobby and all these have been proved to be lucrative in the global trade scenario. Though the ornamental fish trade with a turnover of US \$ 8 billion and an annual growth rate of 8 percent offers lot of scope for development, India's share in ornamental fish trade is estimated to be less than 1% of the global trade and the major part of the export trade is based on wild collection. Taking into account this, KUFOS focused on popularizing and developing entrepreneurship in ornamental fish culture and conducting training cum demonstration programmes on ornamental fish culture with a view to enabling them in starting small - scale units. The public aquarium at KUFOS named after the visionary, former hon'ble Vice Chancellor of Kerala Agricultural University, Dr. A.M Michel is an exhibition-cum-education center on ornamental fishes. It was opened to the public at a function held on 4th April, 2013 by Shri. K. Babu, hon'ble Minister for Fisheries, Ports and Excise, Govt. of Kerala to mark the second anniver-



sary of KUFOS. The complex consists of two wings with a total of 46 tanks of assorted sizes-20 each of the size 4'x2'x2.5', four of the size 7'x2'x2' and two plasma tanks. The entrance has a central Koi pond stocked with a variety of koi fish and two beautiful artificial waterfalls. Nearly 1500 fishes of different aquatic environment comprising well over 25 species of indigenous and exotic freshwater fishes, such as loach, Miss Kerala, barb, gold fish freshwater shark, angel fish tetras, guppy, platy molly, swordtail, arowana, pacu, yellow sun catfish, eel, severum, dollar fish, different varieties of cichlids, gouramies, parrot fish, oscar devil fish, giant freshwater prawn, brackishwater fishes viz. Mullet, milk fish, pearlspot and marine fish like damsel, clownfish, sea anemone, tentacle anemone, butterfly fish, banner fish surgeon fish etc. are on display in combination with several indigenous and exotic aquatic plants set in different styles. In order to make the project self sustainable, a nominal entry fee of Rs.20/- for adults, Rs.10/- for children of the age 5-15 years and Rs.5/- for students (visiting in groups of not less than ten) is being charged. The fishes kept in the Public Aquarium in addition to providing entertainment to those visiting, also motivate the people to start small scale units. Along with the public aquarium, models of different crafts, gears and photographs showing the activities and achievements of KUFOS in teaching, research and extension are also displayed in a separate building which attracts students, public and officers from different institutions. In addition to this, Faculties of various departments of KUFOS are using this facility to engage classes to the B F Sc students. Since the Public aquarium was closed intermittently in many days due to covid 19 pandemic, only regular monitoring like maintenance of water quality parameters, feeding the live fishes were carried out during the year 2021-22

X. Development of Instructional Farm –

The Project on Modernization of Instructional Farm operating under the Department of Aquaculture is a prestigious project of the University funded by the Directorate of Extension with the major objective of improving and updating the instructional farm of the

University. Having been blessed with sufficient quantity of brackish and freshwater, our instructional farm has been practicing the culture of freshwater fishes like Catla, Rohu, Mrigal, Common Carp, Pangasius, Tilapia, Murrel, Olive Barb etc. and shrimps like *P. vannamei* and *P. monodon* and brackishwater fishes like *Latescalcarifer* and *Etroplus suratensis*. The farming is mainly practiced to give hands on training to the students and also to generate internal revenue for the University. As part of the various courses under the Department of Aquaculture, students are regularly deployed in the instructional farm for improving and improvising their skills in seed production, nursery rearing and grow out operations. Students are given the opportunities to do their own aquaculture entrepreneurship during the eight semester of B F Sc programme. So there is an absolute requirement of updating the farming techniques and protocols for attaining the appreciable fisheries professionalism among the students. The farm facilities are also used for Earn While You Learn programme, Post Graduate, PhD research. Through the current project, new farming strategies like Pen culture and Cage culture were taken up to demonstrate the technology to the students and farming community. Regular training programmes are organized for the needy people in aquaculture and allied activities. Two areas with the individual plot size of 5 cents each were cleared and deepened for the installation of cage and pen. One of the major activities undertaken during the plan period was the stocking of the installed pen in the farm premises. The species stocked is *Latescalcarifer* and grow out culture is in progress. A portion of the labour requirement of the farm was met from this fund. It is necessary to continue this project for modernizing the farm further.





XI. Farmers Training Centre

Conducting training to the fisherfolk and fish farmers is an important means for increasing the level of knowledge and rate of adoption of better management practices which, in turn, will help to augment fish production of the State, increasing the income of the farmers, creating more employment opportunities to them and improving the quality of the product for export etc. If such training programmes are residential in nature, it would result in the efficient utilization of more time in a day. As part of the transfer of technology process, KUFOS is conducting various training programmes on aquaculture, harvest and post-harvest technologies under the various extension plan projects. Farmers from all over the State of Kerala are attending these programmes. While organizing these training programmes providing accommodation in the University campus acts as a major constraint which could be overcome by establishing a Farmers Training Centre having all facilities. A Farmers Training Center for imparting residential training to the farmers is established at Puthuveyppu Campus of the University.

While conducting training programmes to the farmers under the different plan projects of the University, field visit, which is an integral component for motivating and attracting more and more farmers towards various aquaculture practices, is also arranging. For this purpose the University has established training cum demonstration centers in selected areas of the villages which has already been adopted by the University. As part of the project "Farmers Training Center" various inputs viz. fish seed, feed etc. were distributed to the beneficiary farmers of these demonstration units and sign boards to these centers were installed to give wide publicity among the people.

XII. Model fish processing plant and training center

The fisheries sector, both in the inland and marine sectors of Kerala State provides enormous employment opportunities to the people. Unlike the other products, the very low shelf life of the harvested fish

acts as a major constraint in marketing the diversified fishery products both in the domestic and export market. The fishes can be stored only for a few hours after it reaches the ground. Thus, knowledge on the shelf life of the fishes and different ways to preserve it for ensuring better quality product are very important and essential to transfer the same to the target group. The above project aims to provide better solutions to these problems by making the fisherfolk aware of the ways of preservation of fish and preparation of various value-added fishery products under hygienic conditions. It will definitely help in creating more employment opportunities to the fisherfolk including the womenfolk along the coastal areas of the State and lower sections of the society, thus leading to women empowerment and uplifting of the society. Equipment for imparting quality training on various aspects of post-harvest technologies were purchased and facilities established under this project is utilizing for imparting quality training to the fisherfolk including the women and students on various aspects viz. techniques of preservation, preparation of value added products, handling of processing and laboratory equipment, quality evaluation methods, sanitation and marketing practices etc. As part of this project the following training programmes were organized.

1. Training programme on "Seafood Entrepreneurship Opportunities"

As part of the plan project "Model Fish Processing Plant and Training Centre", one day online training program on "Seafood Entrepreneurship Opportunities" was conducted on 14th December 2021. The training programme was started with welcome speech by Prof. (Dr.) Radhika Rajasree S R, HOD, Fish Processing Technology, KUFOS and presided over by Dr. B Manoj Kumar, Registrar, KUFOS. Prof. (Dr.) K Riji John, honorable Vice Chancellor, KUFOS and chief guest of the day inaugurated the programme followed by felicitations by Dr. Daisy C Kappen (Director of Extension) and Prof. (Dr.) M Rosalind George, Dean, Faculty of Fisheries Science. Lecture sessions were handled by Dr. Abhilash Sasidharan, Principal Investigator, Dr. T K Sreenivasa Gopal, Professor Chair, CEFPT, KUFOS and T R Ananthanarayanan Iyer, Food Technology, Food Safety & Business expert, Foodasthaon various topics including Introduction to Seafood Entrepreneurship,



Food Packaging and Retail marketing respectively. Twenty four participants attended the programme. The programme came to an end by 3.00pm on 14th December 2021.

2. Training programme on "Seafood Value Addition"

Two day skill development training programme on "Seafood Value Addition" was conducted on 10th and 11th March, 2022 at ICAR-KVK (KAU) Thavanur, Malappuram. The training programme started on 10th March 2022 with formal inauguration by Dr. Ibrahimkutty C, Programme Coordinator at ICAR-KVK(KAU), Thavanur, presided by Dr. Lilia Baby, Assistant Professor, ICAR-KVK(KAU), Thavanur. It was followed by a lecture session on value addition of seafood by Dr. Abhilash Sasidharan, PI of the project. For the first day, a session on "waste management and value addition" was provided, followed by hands on training on the same topic. 50 participants of the training programme were divided into small groups of ten for imparting skillful training in the preparation of Fish, Shrimp and lemon dates pickles. Battered and breaded products including fish Cutlet, Shrimp Fritters, Butterfly Shrimp, shrimp tail On were also prepared. The methods of preparation of fish mince and cutting of Butterfly Shrimp, Shrimp tail On were demonstrated. The programme came to an end by 4.30pm on 11th March 2022.

Introductory Session



Hands On Training



Final Session



3. Preparation of Do it Yourself (DIY) training videos on processing and value addition of fish

The following value added products were selected for the production of DIY videos.

Name of the products selected for the production of DIY training videos

1. Fish pickle
2. Fish balls
3. Battered and breaded fish fillet
4. Fish burger
5. Fish sausage
6. Fish finger
7. Battered and breaded squid rings
8. Fish biriyani
9. Fish fritters



Demonstration videos on fish pickle and fish balls were produced and production of DIY videos of the other items are going on.

In order to improve the quality of the training, the booklet on "Value addition of fish", had already prepared, a thorough review of the books, "Book on Tropical fishery products by Dr. K. Gopakumar" and "Value added fish products by Subhendu Datta" were carried out and relevant details were included.

Video Shooting Stills



reasonable rate at the right time and in the right place.

License and FSSAI Registration of Model fish & fish products sales outlet has been renewed. The renovation work including setting up of polycarbon sheet in the outer area, purchase and installation of equipments such as three FRP tanks for keeping live fish, Tea and Coffee vending machine, Microwave Oven, Generator were done. The outlet is now fully functional with sale of live fish, value added fish products prepared by Students and Research Scholars of the University which includes Dried Fish, Cookies etc.

Model Fish & Fish Products Sales Outlet, KUFOS



4. Setting up of model fish & fish products sales outlet at Amenity centre, KUFOS

Model fish processing plant and training Centre (MFPTC) along with the plan project Earn While You Learn (EWYL) has established a facility "Model fish and fish products sales outlet" at Amenity Centre, KUFOS. This facility has started functioning at Madavana junction that can be utilized by the entrepreneurs as well as the BFSc students under the "Entrepreneurship Learning Programme" for test marketing. Main aim of the outlet is to make the fish and fish products available for the consumers at

Pandit Karuppan Chair

The Pandit Karuppan Chair started functioning on 26/7/2013 with the objectives of developing the fisheries sector and conserve fishery wealth, documenting the traditional knowledge of fishers, empowering the fisherfolk for socio economic advancement etc. As part of the activities of the Chair, information on indigenous technical knowledge and dying wisdom pertaining to various oceanographic aspects having impact on fisheries were unearthed, conducted traditional fisherfolk meet, awareness



campaign, group discussions, seminar highlighting the need to protect aquatic resources for livelihood and security, exhibitions etc. Since the outbreak of Covid 19 Pandemic in the fisheries sector during the year 2020 created crisis in all spheres of fisheries viz. production, processing, marketing etc., it was highly essential to study its consequences by executing appropriate projects especially in the coastal areas of the Kerala State. In view of this, the following two projects funded by State Government were included under the Pandit Karuppan Chair during the year 2020-21.

1. Business strategies and models for managing fisheries sector and marketing of fish products: A study with special emphasis on COVID-19 Outbreak in Kerala"

Fishery sector in India is an important source of food and nutritional security. More than nine million active fishers directly depend on fisheries for their livelihood of which 80% are small scale fishers. The outbreak of the Covid-19 pandemic has stunned the global fisheries sector and country like India is not an exception to that. Trade has faltered as transport restriction prevents supply chain from moving product from one place to another. The pandemic has largely affected the fishers and fish workers mainly in the form of loss of income, and occupation, lower wages, etc.

The above project under the Pandit Karuppan Chair of Directorate of Extension was proposed to study the impact of Covid-19 on marketing of fish and fish products in Kerala, the need for upgrading infrastructural requirements for fishing community in the State, identify the reasons for disruption in the supply chain of fish due to lockdown and develop a model for logistics of fish and to formulate business strategies to prevent future risk of pandemics similar to covid-19 outbreak.

For the implementation of the project, Miss. Geeja K J, Research Associate joined in the project on 28th October 2021. The following activities were carried out during the period of 2021-22

- In the first three months an extensive literature survey was carried out to identify the impact of COVID-19 on marketing of fish and fishery products in Kerala. Since the COVID-19 is a new phenomenon there were a few studies based on the topic. Therefore, the identification of gap with respective concerns was difficult to get an overall picture of the situation.

- Due to the lack of literatures and to get a broader picture of the study various fish markets of Ernakulum District was visited which includes Chellanam, Chembumukk, Vypin, Kannamaly, Andhakaranazhy, Palluruthy and other small fish markets in the vicinity of the University. The study mainly covered 39 organized fish markets in a broader perspective.
- Collected data from the fishermen and the fish markets, developed a questionnaire and a pilot survey has been conducted.
- Based on the available literatures and other studies, relevant variables has been formulated for preparing a model which would help the study. Initiatives for conducting survey in the identified areas are being carried out.

Survey and Data Collection



2. Livelihood Status of Marine Fisherfolk in Kerala in the Post COVID-19

Fisheries sector contributes significantly to the national economy while providing the livelihood to approximately 14.49 million people in the economy. Fishery sector alone has employed 145



million people and contributed to 1.07% of the GDP and generated export earnings of Rs. 334.4 billion. This sector contributes not only to the income and employment of the State but also providing economic and nutritious food security, foreign exchange earner and stimulant to the growth of ancillary industries. Kerala stood at third in terms of marine fishery production. The marine sector of the State alone constitutes **about 8.46 lakh people who earn their livelihood from capture and allied works in marine fisheries in the 222 fishing villages situated along the coastline of the state**, which comes to about 2.51% of the State's total population. The number of fishermen households is estimated to be 1.61 lakhs. The sector is basically informal in nature and there are around 1.91 lakh active fishermen working in the State and almost an equal number of people are presently engaged in fishery related activities such as vending, processing and marketing. Sustainability of the State legitimately needs to address the vulnerability of the fisherfolk. However, the outbreak of Covid 19 and the resultant nationwide lockdown has greatly affected the livelihoods of fishing communities across the country, particularly in the State. Marine fishery is among the many economic sectors languishing due to the impact of Covid 19. The input supply chain is also broken. Basically, the marine fishery value chain depends extensively on collective activities that involve a large number of people. The lockdown imposed on March 24, 2020, and the subsequent extensions, which were followed by the trawl ban, disrupted the livelihoods of fisherfolks particularly on food systems, storage and market chains, both locally and regionally. The impact of the novel corona virus is yet to unfold in its full ferocity and there is every chance is there to continue its economic repercussions even up to two years. Not to mention, it has already severely affected the livelihood of all the stakeholders, particularly the fisherfolks. The present study proposed at this juncture.

The overall objective of this study is to understand the livelihood status of the marine fisherfolk in Kerala in the post Covid 19 period. Specifically, the study aims to understand the,

- a) Pattern of employment and income distribution of the marine fisheries sector,
- b) Social and economic life of the fisherfolk

The Research Associate Mr. Ambrose T.V has joined on 26th November, 2021. The aim of the survey was to assess the impact of Covid -19 on fishermen communities. Literature collection was completed, prepared the draft questionnaire and a pilot study was conducted in the major and minor fish Landing centers in Andhakaranazhi and Chellanam regions of the Alleppy and Ernakulam Districts, during the period from March to April 2022. Based on the pilot study necessary modifications were made in the questionnaire. There are eight fishing villages in Ernakulam District and four fishing villages in Alappuzha District. Data were collected from the 48 respondents belonging to Chellanam, Cheriya Kadavu, Fort Kochi, Kandakadavu, Kannamali, Manasserry, Njarakkal, Thoppumpady of Ernakulam District and Azheekal, Pallithodu, Thuravoor, Kattoor of Alappuzha District.

From the survey it was understood that more than 90 percentage of the fishermen community consist of traditional fishermen. Major contribution in Pelagic fishery comes from in on board motorized vessels which resembles mechanized boats. Gill nets are used in small motorized vessels, where as seine nets are used in inboard vessels. It is identified that there is an increase in the number of 'Ponthvalloms' in Alappuzha District after covid-19 outbreaks. The fishing community in this area faces several financial, social, fishing and infrastructure related constraints.

Survey and data collection



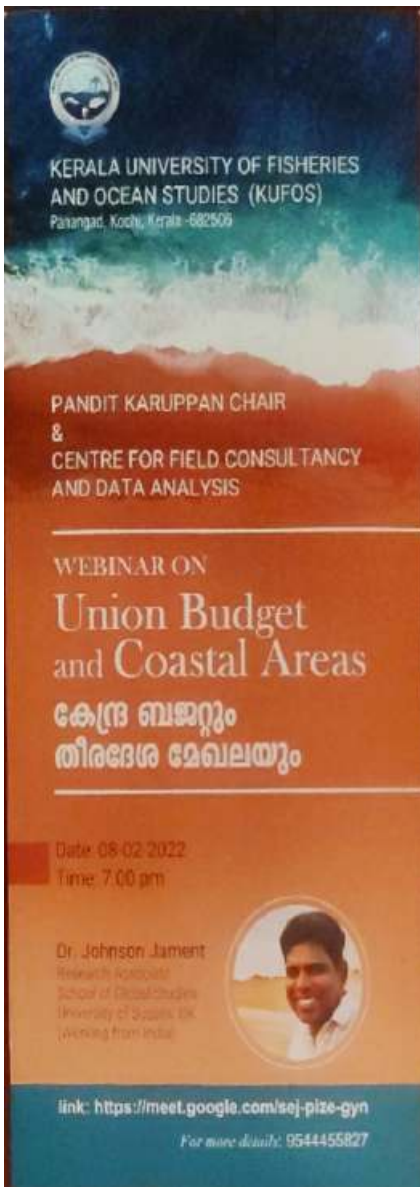


The pilot study conducted in this area showed that the average size of the family of the fishermen both in the Alappuzha and Ernakulum Districts was almost the same i.e. four. The head of the family mainly depends on fisheries as their main occupation and other sources of income were less. The results showed that thirteen percent of the families in Ernakulum District had income from their family members also. The average fishing days/month in Alappuzha was 22 and in Ernakulam it was 19. In both Districts almost 50% of the days in a month, fishermen came with empty hands which caused an increase in their liabilities affecting their livelihood security. Regarding the assistance from the Govt, 50% of the fishermen in Aleppy District opined that they did not get any assistance from the Govt. during the Covid 19 period, while the remaining said that they got assistance from the Govt. both in terms of money and goods (food kit and rations). In Ernakulum District 83% of the respondents reported that they got assistance from the Govt. both in terms of money and goods (food kit and rations) and received some other services like hospital facilities. They also received assistance from voluntary and non-government organisations.

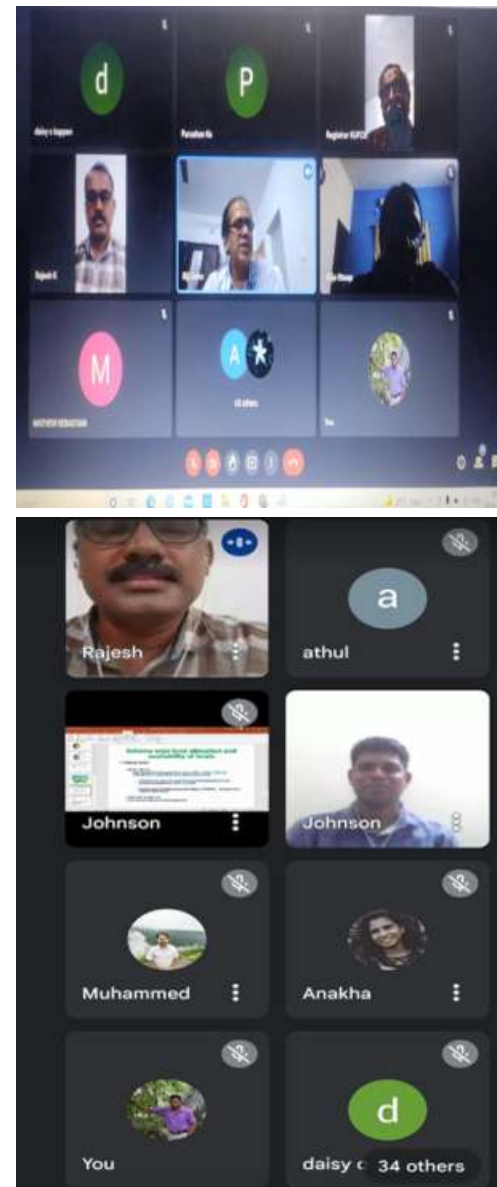
In association with the plan project Centre of Data Analysis and Field Consultancy two programmes were organized.



1. One day webinar on “Union budget and coastal areas” on 8th February, 2022.



BLUE ECONOMY- FISHERIES AND OCEAN GOVERNANCE	
PROGRAM SCHEDULE	
9.30 am	Registration
10.00 am	Prayer
Welcome address	Dr. Rajesh K Asst. Professor, FFM
Presidential Address	Prof. (Dr) B. Manoj Kumar Registrar, KUFOS
Inaugural address	Prof. (Dr) K. Riji John Hon'ble Vice Chancellor, KUFOS
Felicitation	Prof. (Dr) Daisy C Kappen Director of Extension Prof. (Dr) V. Ambilikumar Dean of FFM
Vote of Thanks	Dr. Anoop K K Asst. Professor, FFM
Seminar on Blue Economy- Fisheries and Ocean Governance	
10.30 – 12.30	Dr. C Ramachandran, Principal Scientist, CMFRI, Kochi.
Lunch break	
2.00 – 3.00	Panel Discussion & Distribution of certificates.
Lunch & certificates will be provided to registered participants.	



The registration for the participants was done through the Google meet links. WhatsApp and email were collected and sent the links to communities. More than 100 research scholars and fisheries experts from various institutes participated in the programme. The programme started at 7pm on 08th February 2022. The Director of Extension Prof. (Dr) Daisy C Kappen welcomed all the dignitaries of the programme. A special welcome was given to the chief guest of the day, Dr. Johnson Jament, Research Associate, School of Global Studies, University of Sussex, UK. Prof. (Dr) K. Riji John, Hon'ble Vice Chancellor of KUFOS, Panangad inaugurated the function.

UNION BUDGET 2022 AND COASTAL AREAS

The Union Budget for 2022-23 was presented by Finance Minister Nirmala Sitharaman on 1st February 2022. Start-ups for agricultural and rural enterprises will be funded by NABARD. Indian farmers will receive substantial benefits from the usage of Kisan Drones for crop assessments, spraying of insecticides, and digitalisation of land records. Wheat and paddy farmers will receive direct payments worth Rs. 2.37 lakh crore for minimum support price. The budget for National Coastal Mission, which was nearly doubled in the last fiscal at Rs 200 crore was reduced by Rs 5 crore this year and stood at Rs 195



crore for 2022-23. In 2020-21, the NCM was allotted Rs 103 crore and the government doubled it in 2021-22 at Rs 200 crore. Regarding the announcement related to the Department of Fisheries, Union FAHD Minister said that the overall budget of the Department of Fisheries for the financial year 2022-23 has been increased by 73% in comparison to the allocation of Rs. 1220 crore during the year 2021-22.

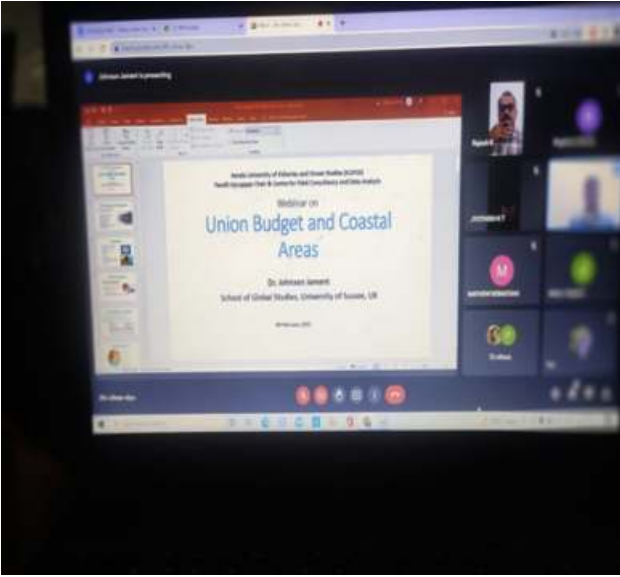
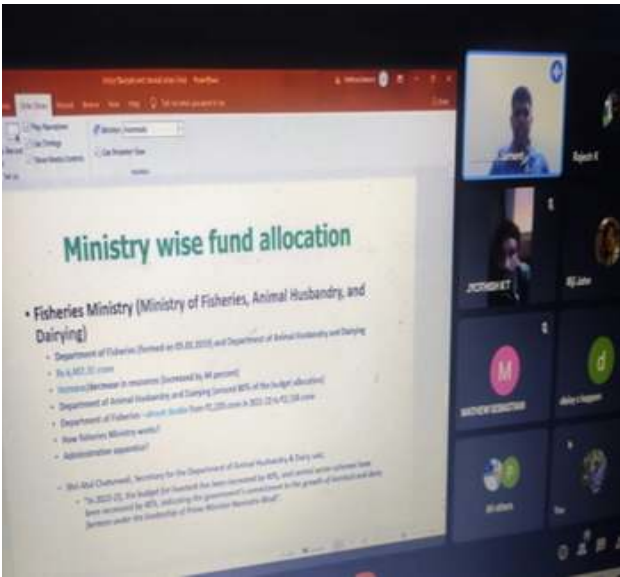
and guidance by the authorities and also the effort taken by the coordinators. The programme ended at 8.15 PM 8th February 2022.

2. One day seminar and panel discussion on “Blue Economy: Fisheries and Ocean Governance”, on 16th March, 2022.

The World Bank defines the blue economy as a healthy system that sustainably maintains and utilizes marine resources with the goal of economic growth, better livelihood and employment. Countries around the world today consider the ocean as a store house of resources. Therefore, the blue economy is an integral part of the future of coastal countries, including India, and of Kerala.

To examine how the blue economy is going to affect the life of the coastal region, P and it Karuppan Chair in association with Centre for Field Consultancy and Data Analysis under the Directorate of Extension of Kerala University of Fisheries and Ocean Studies organized a one day seminar on “BLUE ECONOMY- FISHERIES & OCEAN GOVERNANCE” on 16th March 2022 at KUFOS seminar hall.

The registration for the students was done through the Google forms. Still there was spot registration from 9 am for the students who came up all long way from other institutes. More than 100 students and research scholars from various institutes participated in the programme.



The Registrar of KUFOS Prof.(Dr)B.Manoj Kumar delivered the felicitation for the programme. The webinar was concluded by delivering the vote of thanks by Dr.Rajesh K , Principal Investigator of Center for Field Consultancy and Data Analysis. He expressed heartfelt gratitude towards the support





The inaugural session started by 10 am. Dr. Rajesh K, Principal Investigator of Pandit Karuppan Centre welcomed all the dignitaries. A special welcome was given to the chief guest of the day Dr. C Ramachandran, Principal Scientist, CMFRI, Kochi. The presidential address was supposed to be delivered by Prof. (Dr) B. Manoj Kumar, Registrar of KUFOS. In his absence the programme continued with the inaugural ceremony by lighting the lamp by honourable Vice Chancellor of KUFOS Prof. (Dr) K. Riji John and other delegates on the Dias.

Prof. (Dr.) K Riji John, honorable Vice Chancellor of KUFOS inaugurating the seminar



After the lightening of the lamp, the Hon. Vice Chancellor delivered the inaugural speech. Being the Fisheries and Ocean University, KUFOS is ready to explore the maximum potential of blue economy. Understanding the right meaning of blue economy is inevitable for sustainable development of fisheries sector. The Director of Extension Prof. (Dr) Daisy C Kappen delivered the felicitation for the programme. The extension activities of the University usually used to involve only fisherfolk and fish farmers. Realizing the importance of Blue Economy now a days, the Pandit Karuppan Chair & Centre for Field Consultancy and Data Analysis under the Directorate of Extension took a new initiative to involve the students also which is inevitable for the development of fisheries sector in future. The inaugural session was concluded by delivering the vote of thanks by Dr. Anoop K K, Asst Professor & Principal Investigator. He expressed heartfelt gratitude towards the support and guidance by the authorities and also the effort taken by the coordination committee. Inaugural function

concluded at 10.30 am. During the break tea and snacks were distributed among the audience.

BLUE ECONOMY- FISHERIES & OCEAN GOVERNANCE

After the inaugural ceremony the seminar started at 10.45 am. Dr. C Ramachandran, Principal Scientist, CMFRI, Kochi, handled the seminar. The average land area of our country is 3.2 million km. Land area of up to 200 nautical miles falls within the economic zone of the respective countries which do not actually include the high Seas, so that another two million square kilometres also comes under the purview of our country. Hence our country has an area of five million square kilometres, including land and sea. It has been only 13,000 years since man began to cultivate. But it has been about one lakh years since fishing started. So the history of fishing is really vast. Blue economy is a developmental thinking that has been heard more and more in recent times. Normally the sea is depended for fish and later on fuel. The bottom of the oceans is being explored by considering it as important forms of energy in the future. There is a big competition taking place today in the High Seas Zone, which is claimed by all countries. It is only when our country gains the capacity to compete, then only we can experience the infinite possibilities of the Blue Economy. The 169 Nation Clubs in the world can play a big role in this. The oceans are a vast storehouse of human food. As part of the Blue Economy, it is imperative that economic efforts be made to address the current plight of fishermen who are still living in poverty.

Countries and international organizations must make decisions that will have a major impact on the daily lives of the children of the sea, who live by the sea in search of oil and minerals. Environmental exploration and mining should be considered. Blue economy thinking must move forward while maintaining the chances of human survival beyond the excessive profits of the monopoly capitalists. We must discover the infinite possibilities of the sea and carry out appropriate research activities by universities and technical institutes. Microbe's, drugs, the food of tomorrow, are all at sea. To develop and find them carefully we need to make the centers experts. The morning session was extended up to 1.30pm and it was participatory in nature. Students cleared their doubts and queries. After the lunch the seminar got resumed with panel discussion. Students were



grouped into five groups and they were asked to discuss their view points on blue economy. Each group presented their ideas and perception on blue economy with respect to their field of study which includes management, economics and marine biology. The suggestions put forward by various groups are listed below.

Blue economy presupposes sustainability as well as profitability by exploring the marine resources.

Research and development should be encouraged in this field.

Programmes involving fishermen and other stakeholders should be promoted.

Waste management and treatment should be promoted.

Nutritional deficiency should be met by means of blue economy.

Sea Bed Mining can result in acidification.

Mining regimes should be used in a controlled manner.

CRZ notification needs more clarity regarding the existing constructions.

Drugs which are made of marine resources can be later used as bioweapons.

Each coastal region is different therefore universal programmes are not possible.

Funding can be used for the social upliftment of the dependent communities.

Wild exploration of blue economy has immense potential to reach the goal of \$5 trillion economy.

Research and Development department should focus more on exploration of undiscovered marine resources.

Enhance the skill development with the incorporation of indigenous knowledge of fishermen.

Certificate Distribution to the participants



The valedictory session started at 4 pm. The certificates were distributed to the participants by the Director of Extension Dr. Daisy C Kappen and Principal Investigator of PKC Dr. Rajesh K. The feedbacks were collected from the students.



XIV. Massive open online courses

For India to emerge as a knowledge super power of the world in the shortest possible time it is imperative to convert our demographic advantage into knowledge powerhouse by nurturing and honing our working population into knowledge or knowledge enabled working population. With an ever expanding field of knowledge, the knowledge and skill sets required by an individual to successfully lead life has also expanded, throwing up challenges of learning more and more throughout one's life. Add to that challenges of pedagogy being faced by the teachers to package more and more for the uptake by the students within the same amount of time available. Fortunately, the ICT as a tool in education is available to us at this juncture

The **Massive Open Online Courses (MOOC)** are online course aimed at large-scale (*massive*) interactive participation (enrolment) and open access via the web. In addition to traditional course materials, MOOCs could be certificate courses or non-certificate courses that provides an interactive user-friendly discussion forum for students, professors and teaching assistants and immediate feedback platform for quizzes and assignments. MOOC courses generally are presented through videos, e-books, quick assessments, and discussion forums. All these work hand in hand to deliver information to an influential network of people with common interests. This has been instrumental in helping students, professionals, and several others in gaining a thorough understanding in the respective areas. MOOCs are widely researched development in distance education, first introduced in 2008, that emerged as a popular mode of learning in 2012.

Learning online has become a necessity, especially during these pandemic times. And even without that, the traditional classroom learning in itself can be quite limiting. With the furthering of technology, it only makes sense to exploit the internet for learning purposes. More so, the world has become a global village where information is the new currency. There is a need to get information across the globe without distance, space, or time being a major constraint.

MOOCS platforms in India

In recent years, the enrolment to Massive Open Online Course (MOOC) has increased tremendously. India after US is dominating the global growth in enrolments. Seeing the growth of enrolment from the country and satisfying the need of education, India has started various projects for offering MOOC courses. Currently, NPTEL, mooKIT, IITBX, and SWAYAM are the platforms used in India for offering courses. The University Grants Commission (UGC) along with the HRD (Human Resource Development) Ministry has launched the MOOC program in India for Higher Secondary, Bachelors and Masters' programmes, with NPTEL (SWAYAM) being the approved platform. This covers a wide range of subjects that may or may not be taught in regular campus studies. This is chiefly offered by IITs and IIMs.

Benefits of MOOC

Knowledge sharing and knowledge gathering platform

- Access to the course
- Offer a variety of subjects
- Material is advocated by top professors- The course material of MOOCs has been selected by top professors in universities.
- Prepare one academically for college.
- MOOCs are available in different languages.
- Boost CV and higher career prospects.
- Learn from peers around the world
- Free/paid-Certificate courses



MOOC in KUFOS

Vision:

Provide high quality, affordable education at large scale

Mission:

Establish KUFOS Massive Open Online Course Platform/Centre (KUFOS *e-learning centre*). An education platform for delivering online courses in Fisheries, Ocean Studies and Allied subjects targeting unlimited participation and open access.



MOOC Recording Facility at KUFOS



MOOC Office at KUFOS

Steps taken

Kerala University of Fisheries and Ocean Studies has been recognized as a NPTEL Local Chapter (LC ID: 4755). Dr. Maya Raman (Associate Professor, Dept. of Food Science and Technology) as a SPOC (Single Point of Contact) in NPTEL Local Chapter, from April 2022.

The screenshot shows the NPTEL Local Chapter page for Kerala University of Fisheries and Ocean Studies. The page includes the NPTEL logo, navigation links (Initiatives, Programs, NPTEL STARS, More), and a Login button. The main content area features the university's logo and name, along with the SPOC details for Dr. Maya Raman. A message from NPTEL expresses appreciation for the university's support. Below this, there are filters for course status (Present, Gold, Elite, Silver, Successful, Participation, Topper, Rating, NPTEL Stars) and a sidebar with links to Documents, Careers, Help, and other resources. The footer contains social media icons and a copyright notice for 2022.



- In association with Director of Planning, purchased furniture (30 pieces of chair cum desk for SWAYAM PRABHA class room) and fixing dish antenna.
- Infrastructure development for MOOC room –KSCADC (in progress).
- Recording for online Courses(Dr. AbhilashSasidharan) (in progress)
- Purchase of equipment for MOOC initiated for the FY 2022-23.
- Initiatives for training and implementation ofMOOC website (MOODLE).
- Two MOOC courses sent to NPTEL (IITM, National Coordinators) for approval.

Benefits Under LC

- Credit Transfer for students who take NPTEL Online Courses. Universities can make their own policy to implement the credit transfer.
- NPTEL provides toppers with the opportunity to gain rich research experiences with faculty from prestigious IITs and IISc.
- The students, who are registered under LC and have appeared for at least one NPTEL exam are eligible for free soft skill training programme. This will be helpful for them during placement.
- The fee waiver is provided to those students (or in bulk) studying at institutes that partner with NPTEL as Local Chapters.
- Support for the conduct of seminars/webinars by SPOC relevant to MOOC
- LC Interaction with NPTEL Coordinators on every Thursday

Courses Identified for MOOC Programme

1.Course: Canning Technology and Value Addition of Sea Foods by Dr. Abhilash Sasidharan

About the course- The course will provide a comprehensive knowledge on the concepts of canning technology, types of cans, machinery, canning process and quality issues. This will also give insights on thermal process calculations, various value-added food products and its quality management.

Dr. AbhilashSasidharan delivering online class at KUFOS



Editing introductory video for the course for NPTEL approval



The introductory video of the course was also mailed for the approval.



2.Course: Food Packaging Technology by Dr. Maya Raman and Dr. Jenny Ann John

About the course: Food is a highly perishable commodity and need a suitable packaging for extending the shelf life and preserving the nutritional quality. In this course, the various types of packaging materials and its properties and applications will be covered. The course will also cover the regulations and standards associated with it.

3. Dr. Safeena M. P and Dr. Manjusha K. are drafting the syllabus for the MOOC courses.

Guidelines for Coordinators offering Massive Online Open Courses and other relevant information:

1. Proposing a course: Courses can be of duration of 4 (10 hour, 1 credit)/ 8(20 hour, 2 credit)/ 12 weeks(30 hour, 3 credit) or more. Faculty member should have taught this course at least 3 times before offering it online.

2. Identifying potential topics: Widely discussed topics and relevant to KUFOS such as, Fisheries and Ocean studies, and other allied subjects.

3. General course structure: The common duration is from 8 to 12 weeks; however, it may be increased too. A MOOC is accessible 24 hours a day, 7 days a week. The courses should be divided into sections and activities that need to be completed within the stipulated time. The learners/enrolled participants must be given an idea about the topic and each weeks' class, prior to the class. Each section should contain at least one educational video, video tutorials quiz/questions, assignments, discussion forum and additional references/ educational materials.

3.1. Course contents for one week: 2.5 to 3 hours of video lectures per week with duration of each video between 20 and 30 minutes. The video includes about half hour of tutorial section, which can show how to solve problems similar to assignment. Every video should have a lecture title, concepts covered and keywords required for it to be searchable using various search engines. Every video can have an “Activity question” – a self-test question to check if they have understood. Also, can have a “Think about this” question. Additional reading material – in terms of journal papers and other interesting videos to be watched can be given.

Options:

- Can add videos from guest faculty and other industry professionals.
- Different formats of lectures such as group discussions (with students or other experts), maybe even a lecture by some other guest lecturer can be had, presentations from the students.
- Demo of any tools used as part of the course.
- Recorded experiments/ virtual lab videos associated with the course.

Another component is the interactive discussion forum, where students interact with a wide diverse group of participants. An assignment based on the contents of the week for every week of course duration.

3.2. Practical courses: The practical courses need to be conducted in the lab with all experiment on-hand experience by participants.

4. Best practices further suggested: Usually, there are no pre-requisites for taking a MOOC, apart from having access to a computer with a good internet connection. Most of the time, the educational or



academic background of students isn't important. Students usually don't need to buy books as reading materials are provided. Educational materials are visible to registered users even when the courses are completed. The majority of the content is delivered asynchronously (meaning students can access it in their own time and at their own pace). It is also suggested that the course content be laid with a watermark logo of KUFOS in order to avoid online piracy of materials. However, sometimes there can be optional synchronous events such as 'live' webinars (interactive sessions) which require participants to join in at specific dates/times, where queries from the students shall be answered by the experts.

5. Registration and fee: All the details of the students registering for the course shall be maintained at KUFOS by the MOOC technical team, who would assign individual username and password for the users. A student can access the course only after the online registration. At the end of each course, there should be exams (upon fee payment) for assessing the knowledge of the student. Successful students shall be issued certificates.

6. Feedbacks: At the end of each course, student survey and feedback collection will be done to ensure the best learning experience. Keeping these surveys anonymous will increase the chances of collecting honest responses.

7. Copyright and IPR: The copyright and other intellectual property issues related to the courses lie with the University and the faculty in-charge.

8. Technical Support: The technical support required for the preparation, documentation, editing, assessment and evaluation of courses and maintaining KUFOS MOODLE site shall be provided by the KUFOS MOOC Technical Team.

Other Extension Activities

“BharathkaamruthMahotsav”- Commemorating the 75 years of India's Independence conducting programmes at KUFOS on 1/11/2021

The Govt of India is commemorating the 75 years of India's Independence as “BharathkaamruthMahotsav” which would commence from 75 weeks before 15th August 2022 and continue up to 15/8/2023. The idea behind this mahotsav is to create a vision for India @2047. The mahotsav will see the various social and cultural events along with the showcase of technological and scientific achievements of our country. The event will also highlight some unknown locations of India and contributions made by freedom fighters. In this connection all higher Education Institutions were directed to under take the following activities on this occasion

1. Draw up detailed plans for events/activities. Convergence of themes/programmes while planning out events/activities.
2. Events/activities may be planned to showcase accomplishments since 1947 so as to instill a sense of pride, and with a view to creating a vision for India@2047
3. The celebrations may be a reminder of the contributions of those freedom fighters and locations that have remained in relative obscurity
4. Propose activities and events to reflect an All India character cover events/ locales across the country and be people intensive
5. A calendar of activities/ events with specific timeliness, incorporating elements of the proposed action plan and suggestions made thereon



UGC has requested to take appropriate measures to undertake the above activities in the University and affiliated colleges and publicize them so that general public is made aware. In this context KUFOS has conducted a quiz competition on 31/10/2021 and a book exhibition on 1/11/2021 depicting contributions of freedom fighters, technological and scientific achievements of our country etc.

**Quiz Competition - Prize distribution to the winner by the honorable VC of KUFOS
Prof.(Dr.) K Riji John**



Book Exhibition on 1/11/2021



Extension Council Meeting

The first meeting of the reconstituted Extension Council was held on 18/11/2021 at 11am in the Conference hall, KUFOS. The following members attended the meeting.

1. Dr. Riji John	-Honorable Vice- Chancellor
2. Dr. B. Manoj Kumar	-Registrar, Special Invitee
3. Dr. C. Ramachandran	- Principal Scientist, CMFRI, Kochi
4. Shri. T. Purushothaman	- Fish Farmer Representative
5. Shri. Raju K S	- Fisherman Representative
6. Dr. Daisy C. Kappen	- Director of Extension i/c
7. Dr. Devika Pillai	- Director of Research
8. Dr. S. Suresh Kumar	- Dean, Faculty of Ocean Science and Technology
9. Dr. Rosalind George M	- Dean, Faculty of Fisheries Science
10. Dr. Suryakala CD	- Dean, Faculty of Fisheries Engineering
11. Dr. V. Ambilikumar	- Dean, Faculty of Fisheries Management
12. Dr. Linoy Libini	- Head Fisheries Station, Puduveypu
13. Dr. Dr. K. Dinesh	- Special Officer, Regional Center, Payyannur

Honorable Vice Chancellor chaired the meeting, welcomed all the members and briefed about the purpose of the meeting. He suggested that the extension activities should mainly focus on the problems of fish farmers and bring it in research study for finding solutions for the problems faced by them. Dr. C. Ramachandran, Principal Scientist, ICAR-CMFRI, suggested to strengthen the extension activities by linking with the Department of Fisheries. He also emphasized the need for updating the KUFOS website so as to give wide publicity of the extension activities. Shri. T. Purushothaman, Fish



Farmer Representative, pointed the necessity for focusing the problems of the farmer and requested to adopt one village from the Kasaragod District in the forthcoming 14th five year plan of KUFOS as the farmers in the this District are facing severe problems due to incidence of diseases. Shri. K S Raju, Representative of the fishermen explained the problems faced by the fishermen community due to natural calamities like Okhi, Corona etc. and requested to conduct a research study about the climate variations that occurring in the sea. Also requested to install cold storage facilities along the coastal area as they are facing difficulty in marketing their catch which fetches very low price during the peak availability. Registrar, KUFOS informed that as part of the 14th plan project the Department of Fisheries has taken necessary steps for installing adequate storage facilities to the fisherfolk. Training fishermen in sea rescue operations as the University does not have expertise in this field it requires further study for which a committee shall be constituted to identify the areas in which the KUFOS can associate and collaborate with the Department of Fisheries.

The Principal Investigators presented the achievements of their extension projects.

1. Farm Advisory services (PI Dr. Safeena MP) - decided to examine the possibilities of providing online advices to the farmers. (Action – Dr. Safeena MP)
2. Village Adoption for Empowerment and Capacity Building Ensuring livelihood of Fisherfolk in Central Kerala (PI Dr. Giji Ittoop) - Decided to adopt 2-3 villages/year (Action - Dr. Giji Ittoop)
3. EWYL (PIs Dr. Binu Varghese, Dr. Abhilash Sasidharan & Dr. S Sureshkumar) - To ensure the students participation it is decided to introduce the program from the BFSc first semester onwards and to give incentives like certificate of participation and grace marks to the students. (Action - Dean, Faculty of Fisheries Science)
4. Center for Studies in Gender Concerns and Entrepreneurship Development in Fisheries (PI Dr. Shyni K) - To identify and locate a specific area initially for starting the work. (Action - Dr. Shyni K)
5. Museum and Aquarium (PI Dr. Rajeev Raghavan) - To expand the facilities for accommodating more specimens, aquariums etc. (Action – UE and Dr. Rajeev Raghavan)
6. Exhibition Unit (PI Dr. Jayalakshmi K J) – To take urgent action for allotting space for keeping the exhibits and to explore the possibilities of starting a mobile training unit (Action – Registrar and Dr. Jayalakshmi K J)
7. Audio Video Recording Studio (PI Dr. Daisy C Kappen) – To fix a target for producing instructional films in the field of aquaculture and fish processing and also to upload the films already produced by KUFOS in the website (Action – Director of Extension)
8. Strengthening Aquaculture Value Chains for improving socio economic status of coastal communities (PI Dr. Liny Libini) - Define the particular aquaculture activity like oyster culture, cage culture etc. and to make the project more specific (Action Dr. Liny Libini)
9. Waste to wealth (PI Dr. Radhika Rajasree) - A Zero waste approach & value addition of fish processing discards for entrepreneurship development. - As the project submitted include both research and extension component it is decided to modify the proposal by excluding the research component and to resubmit. (Action – Dr. Radhika Rajasree)
10. Center for Field Consultancy and Data Analysis and Pandit Karuppan Chair (PI Dr. K Rajesh) - To take urgent steps to appoint project staff for the speedy implementation of the project. (Action - Registrar)

The meeting ended at 5pm.



CONCLUSION

Kerala University of Fisheries and Ocean Studies (KUFOS), the first Fisheries University in the country is established for the development fisheries and ocean studies in the State of Kerala. The University has excellence in the field of teaching, research and extension so far. Directorate of Extension under KUFOS at present is implementing 14 extension projects funded by Government of Kerala aimed at the integrated development of the community, viz. social, cultural, financial etc. These projects significantly contributed to improving the quality of life of the fisherfolk and fish farmers and also helped in enhancing their socio economic status and welfare. The projects like “Village Adoption for empowerment and Capacity building ensuring livelihood of Fisherfolk in Central Kerala” aimed at empowering the fish farmers of the Panchayaths also helped to preserve the indigenous fish species that are facing threat leading to their extinction.

The Directorate of Extension has introduced an environment - friendly farming system focusing freshwater fish/prawn culture, brackish water fish/shrimp culture, ornamental fish culture, cage culture integrated farming etc. by utilizing the water resources available in private and public sectors of the villages. Besides being efficient in transfer of relevant technology to the fisherfolk including women beneficiaries it was with a gender sensitive approach that the projects were implemented. Through constant and continuous effort the rate of adoption of the technologies by the farmers in the adopted villages increased to a great extent and the technology gap existing at present between the research system and the farmers could be minimized. The Audio Video Recording Studio established at KUFOS is being utilized for documenting the activities and achievements of KUFOS in teaching research and extension which are mandatory to the University. It also plays a significant role in income generation by outsourcing the facilities to other institutions. Public aquarium, museum, instructional farms in the University is being utilized for the educational purpose of the University and other institutions and imparting training of the farmers as well. In future, with constant efforts by providing adequate extension services to the community, KUFOS can change the existing scenario of the fisheries sector, which is one of the most backward area next to tribal and can make a landmark in the total development of this sector.



**KERALA UNIVERSITY OF FISHERIES AND OCEAN STUDIES
(KUFOS)**

PANANGAD, KOCHI